Oxford University Cave Club

Chica 2006

Exploration and Discovery in the Spanish Picos

http://expeditions.oucc.org.uk/chica2006/

Contents

above – Culiembro resurgence cave
cover image – north along the Cares Gorge

1. Introduction and Background

Oxford University Cave Club (OUCC) will return the the Picos de Europa National Park in Asturias, North Central Spain in the summer of 2006 with the aim of continuing recent excellent progress in the extension of deep underground cave systems in the region.

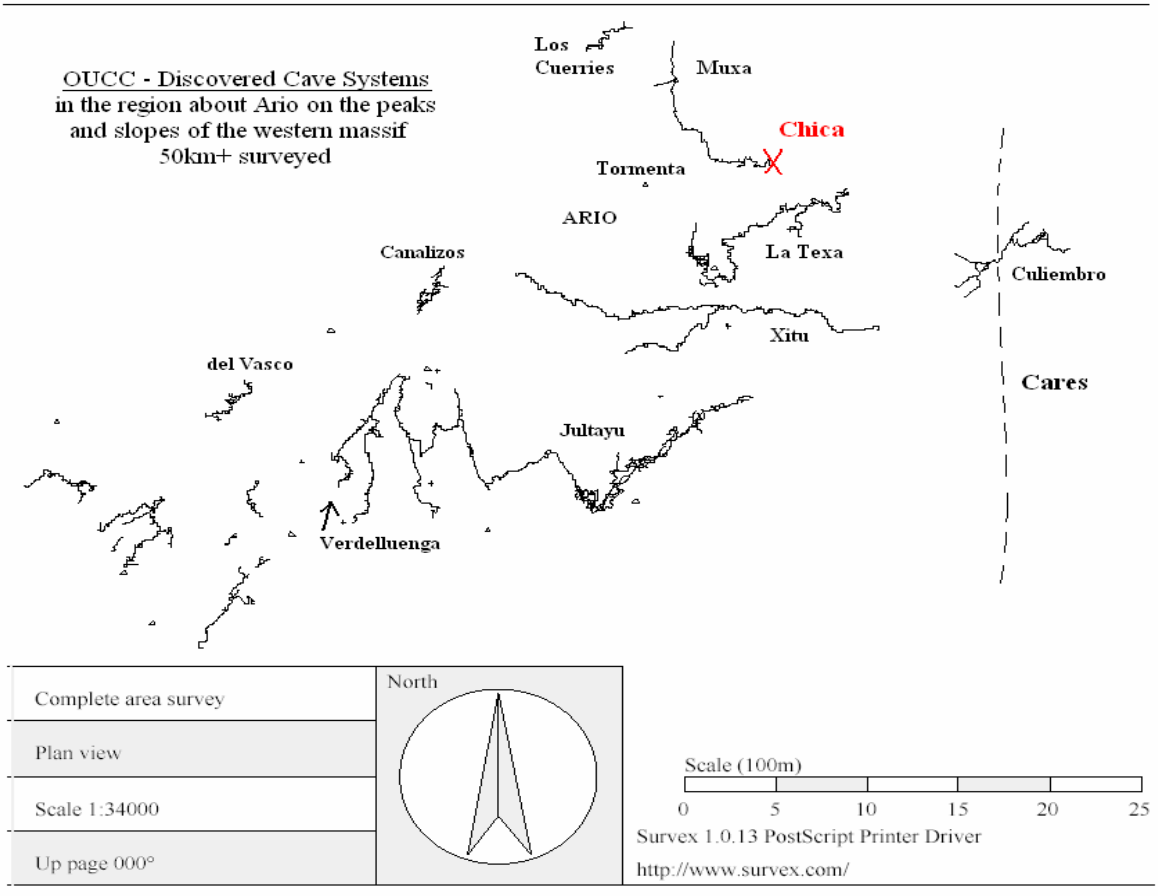
Fig 1 – Expedition Location

A key focus of this year's expedition will include the attempted extension and connection of various streamway systems acting as feeders to the great Culiembro resurgence, lying at the foot of the majestic Cares gorge that dissects the Picos Central and Western Massifs (cover image). Many important steps have been made towards the long-term target of a direct connection between Culiembro and any of several cave entrances high on the slopes of the western massif where our Ario camp will be situated. These include the discovery of the Xitu[1,2] and Tormenta/La Texa[3] streamways, systems exceeding a kilometre in depth that account for a considerable proportion of the water emerging from the resurgence.

Fig 2 – Slopes of the Cares

It is widely accepted that further, hitherto unknown systems must also contribute to the resurgence[4]. The 2003 OUCC discovery of Fissura de Chica (aka Chicago) and its subsequent extension to some 200m depth has generated excitement that the club may have located another contributor. As the cave is situated directly above the Pozu Cabeza Muxa sump (see fig 3), a key impediment to further progress towards culiembro, it is possible that Chicago will extend the entire system. The exploration of Chicago will thus constitute the primary expedition aim, although a possible collaboration with OUCC-associated diving teams may facilitate the rigging of nearby Asploderu La Texa and the exploration of its terminal sump. Such central aims, in addition to several secondary objectives, are described in greater detail below.

Figure 3 – Survey of Chica and Nearby Systems



It is expected that the 2006 Expedition will run for 6 weeks from June 31st to Aug 15th, although dates are yet to be finalised.

We consider expedition objectives in the following section, before section 3 outlines surface and caving logistics and section 4 the various science projects planned. A projected expedition budget is given in section 5.

2. Expedition Aims

Primary Objective – to continue the exploration of Fissura de Chica.

Secondary Objectives –

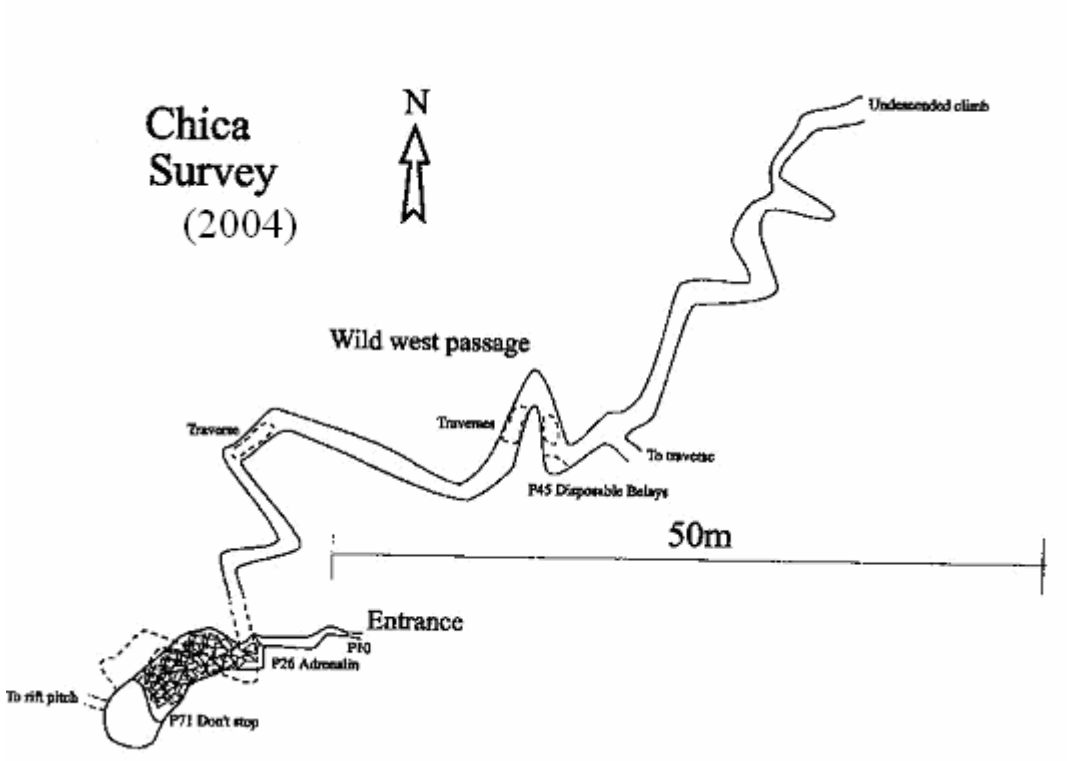
- ‘Shaft-bashing’: to search for further cave entrances in the Ario area;
- Collaborative side project: to support the efforts of professionally trained cave divers in investigating the La Texa and/or Muxa sumps.
- Hydrology: to carry out dye-tracing experiments in order to understand further the connectivity of several provisionally connected Culiembro feeder systems.
- Exploration science: surveying and logging of cave/cave entrances (section 4).
- Conservation: to carry out an assessment of the effects of our expedition on the appearance of Fissura de Chica, and cave life around and within the cave and associated entrances (considered in section 4).

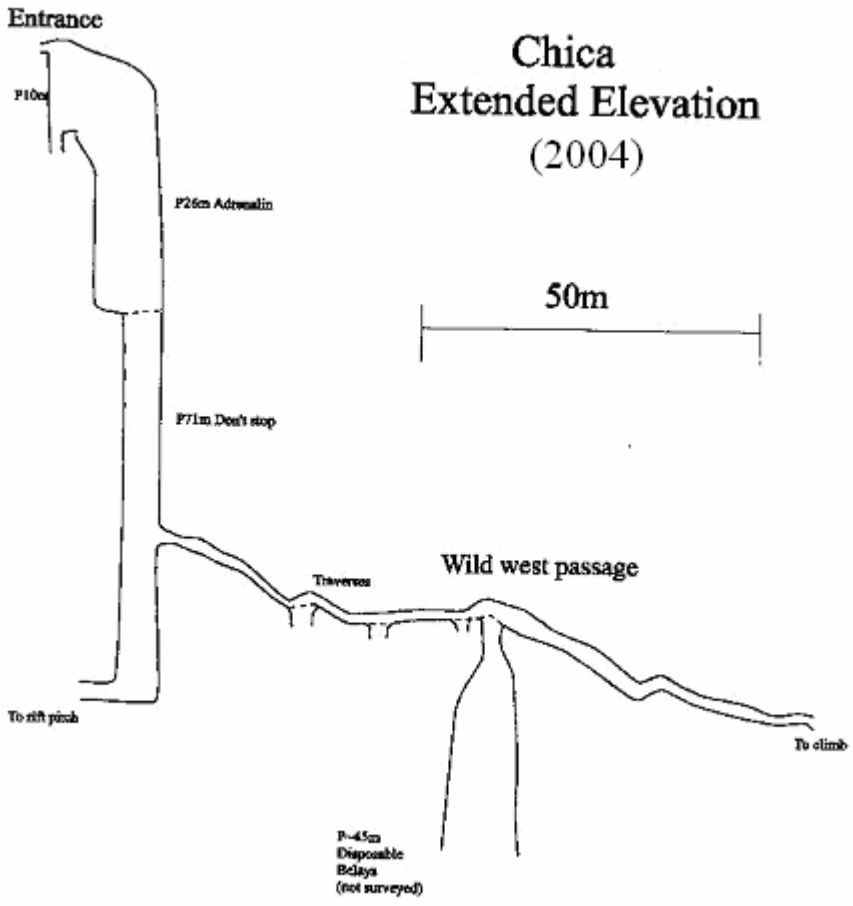
Fissura de Chica

Chica, originally named Chicago, was discovered by a group of young Oxford cavers in the latter stages of the 2003 Tormenta Expedition. It is a small indentation in the Cabeza Chica hillside, one of many similar features but marked by a distinctive overhanging tree, and is situated a few hundred metres from the entrance to La Texa. A narrow fissure gives way to the 100m+ entrance series. This part of the cave has been described as a ‘vertical maze’, with ‘several parallel shafts’[5]. A survey, composed during exploration in 2004[6], is included below.

One of two alternative routes can be taken to reach the head of *Disposable Belays* pitch at a depth of ~100m, the easiest of which involves swinging via an obvious window two thirds down *Don’t Stop* pitch onto the fossilised *Wild West Passage*, which can be followed to the pitch-head.

Figure 4 – 2004 Chica Surveys





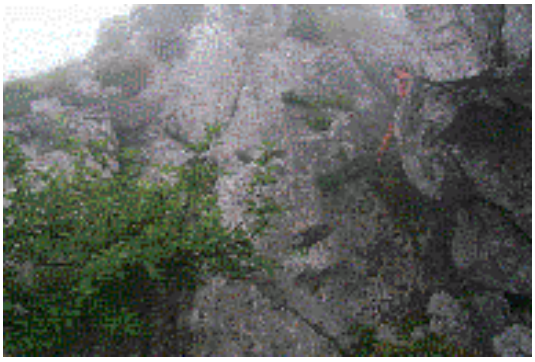


Figure 5 – Paul Garver at Chica shortly after 2003 discovery

Don't Stop pitch drops directly into a three way rift, and also indirectly to the same rift via *Tacklelsack Ledge*, which is situated 35m down,. Ways on through the rift are impassably tight but were bypassed by a climb to a higher level during exploration in 2004. The boulder-belayed 5^{th} and 6^{th} pitches drop once more into a tight rift that could not be bypassed and was left as the limit of exploration at the end of the Oston 2004 OUCC Expedition.

Progress made during 2005 has reignited interest in Chica. The second rift section was again bypassed via a climb at a higher level. Exploration was terminated due to time constraints with the discovery of a '…50m deep, 8m diameter pot' which the discoverer '..could get stones to rattle down for 12 seconds.'[7] If reports are accurate, such a drop would take Chica close to 275m depth, commonly considered to be a 'break-through' depth for vertical caves of the Picos.

Although the pitch at the head of the second rift bypass will represent a primary lead for 2006 exploration, there is also considerable interest in higher features that are yet to be fully investigated, such as possible alternative windows on *Don't Stop* and *Disposable Belays*, and un-pushed rifts at the foot of the entrance series (less investigated to date as they comprise the established 'difficult route' to the current limit of exploration). We hope, time allowing, to more fully explore these upper regions of the cave.

Figure 6 – tight progress, Tormenta 2002

Chica Position, Hydrology and Diving Projects

The Fissura de Chica entrance series appears to drop directly above the terminal sump of Pozu Cabeza Muxa at -906m. This cave was pushed between 1978 and 1984[8,9] by the Sociedad de Investigaciones Espiologicas (SIE), a Barcelona-based caving club with whom we regularly collaborate. It is thus hoped that Chica will drop into the system beyond the sump and progress to Culiembro, although a substantial increase in depth is required in order to achieve this goal.

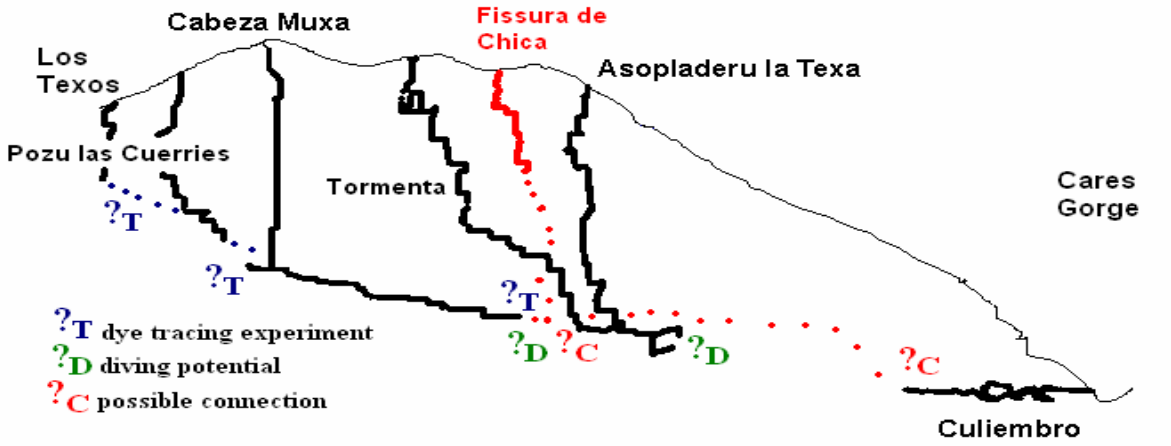
Asploderu La Texa represents another major site of interest with regard to a possible connection. The terminal sump in this case has yet to be explored and we would await the

report of associated cave divers with interest (see below). As Chica appears to be dropping farther from this system, however, such a project will require rigging of an additional deep cave and will only be pursued if time and resources permit (and with substantial rigging help from the divers themselves).

The downstream **Muxa sump** was dived in 1988 by Rick Stanton[10], who found a deep phreatic tube at -33m water level that may connect with the upstream limits of Cueva Culiembro at the foot of the Cares. Anthony Seddon, a highly experienced OUCC caver and cave diver recently involved in pushing the current world cave depth record, believes that connection between the downstream reaches of Muxa/La Texa and Culiembro is 'potentially very close indeed'. For this reason, he and several highly experienced cave divers, including Martin Groves and Joel Corrigan, plan to rendezvous with the Chica 2006 Caving Expedition and use the pooled surface resources to investigate a possible link between the separate systems.

Figure 6, below, demonstrates the predicted connectivity between some of the known cave systems feeding Culiembro from around Ario. A further side project for 2006 will include the location and rigging of **Pozu Los Texos**, a 218m deep cave situated in the Vega Maor 1/2 km north of Ario[11]. Last explored by OUCC/Derbyshire Cave Club in 1963[12], the cave would represent relatively easy rigging and descent but is anticipated to feed Pozu Las Cuerries, itself a feeder of the Muxa streamway[4]. It would thus represent an ideal location in which to undertake a dye tracing experiment, should we locate the entrance.

Figure 7 – North-Facing Projected Elevation of Western Massif Caves



3. Logistics

Travel, Accomodation and Food

As in previous years, expedition gear and a select number of expedition members will be driven to and from Spain in an expedition vehicle. We hope that this will be a Land Rover kindly provided in recent years by the Gordon Foundation, but are prepared to purchase and afterwards sell a vehicle should this support become unavailable. Expedition members with

full driving licenses will be nominated as drivers and covered under the vehicle's insurance. The vehicle and equipment will be left at the Los Lagos car parks should access still be provided by the National Park (see Permission section below), and supplies necessary for camp will be carried to the Vega de Ario site at 1600m altitude. Variously sized tents and partial rock ruins will provide shelter throughout the expedition. Supplies will be restocked throughout the expedition (primarily food and fuel) during trips down the hill and to Cangas de Onis, a local town, in the vehicle. We will take certain food supplies that are difficult or expensive to obtain in Spain with us when we leave Britain.

Permission

Permission for the expedition will be obtained as in previous years from the Picos de Europa National Park Reserve and from the Federacion Asturiana de Espeleologia (FAE) in order to camp and cave in the area respectively. We do not expect a problem in this respect given the excellent and long-lasting relationship of these organisations with OUCC, developed throughout thirty years of caving in the region. We must, however, be prepared for changing circumstances. It has emerged recently, for example, that there will be a reduction in the amount of traffic granted permission to reach the Los Lagos car parks. We hope that we will be granted an exception to any imposed restrictions, and pre-expedition letters should clear up this matter. Permission for the export of conservation samples (see science, below) will also be requested from the aforementioned institutions.

Caving Logistics

Figure 8 – SRT use

Vertical cave sections will be negotiated using single rope technique (SRT), the safest and most efficient method of such underground exploration; SRT involves the use of downward friction devices and upward prusiking[12]. All expedition members will have a base-level of acceptable experience from caving in similar systems in the Yorkshire Dales, with some senior club members providing direction and assistance where required. Once in place, ropes will be left in the caves for the duration of the expedition, or until the cave is bottomed. They will be checked regularly for wear and any ropes from previous expeditions that are used will be assessed stringently for condition and washed prior to the expedition's departure. The expedition will endeavour to use new ropes for the cave entrance series where the most use and wear is likely to occur.

A majority of expedition members will also be competent in safe rigging. Bolts will be secured into rock within unexplored areas and at pitches where it is deemed necessary to improve on 2004 rigging, some of which was carried out by relatively inexperienced individuals. Teams of cavers will be kept low (two or three members) for efficient progress and use of resources. All cavers will use standard equipment including thermal undersuits, protective overlayers, helmets with LED lighting systems, protective wellington boots, and usually wet socks and knee pads. Spare articles of such personal kit will be available in the event of equipment failure or loss.

In the event that exploration of Pozu Chicago exceeds four or five hundred meters in depth, it may become necessary to plan for longer underground excursions and set up an

underground camp. Any camp would require warm fibre-pile sleeping bags which we plan to hire from the Ghar Parau Foundation as in previous years. Foil-wrapped food sachets and high-energy foods such as nuts and chocolate would also be stored at such a camp, within waterproof daren drums. Comfort and safety, as well as a supply of water, would be priorities in the choice of location.

Figure 9 – underground camp; physical and mental recuperation

Medical, Rescue and Safety Considerations

The expedition will operate a standard caving call-out system, whereby caving teams are all required to leave a written record of their planned trip and expected time out prior to departure. There will always be a minimum of 3 or 4 cavers at camp ready to respond to a missed call-out time. 'Rescue runner' cavers, usually of considerable experience and caving ability, will depart first and report any underground situation to other team members on the surface. All cavers on expedition will be trained in basic first-aid and several members, at least one of whom will be out on expedition at any one time, will be trained in advanced wilderness medicine.

In the event of an underground incident leading to incapacitation of a casualty, the caving stretcher equipment will be taken underground and the casualty carried out as far as is possible given the environment. Such a scenario will be practised in a British cave prior to expedition departure. Spanish rescue authorities will arrive by helicopter approximately 24 hours after our initial phone calls, and our earlier preparation will ensure that we facilitate the professional rescue effort.

An expedition Medical Officer will prepare compact, yet versatile, personal first-aid kits that all cavers will be required to carry underground. More comprehensive medical supplies will be stored at Los Lagos and the Ario camp.

No OUCC caver will be permitted under expedition leadership to participate in any diving activities under any circumstances. The OUCC role in the above diving projects will be purely supportive – there to rig to sumps and search for dry bypasses whilst the professionals search for a way through them!

Publication of Results

We will publish an Initial Report upon return to the UK in August/September 2006. A comprehensive Final Report will be published and copies sent to sponsors and suppliers before the end of 2006. The report will be made available electronically on the expedition website. Reports are also planned for the *OUEC bulletin* (as required) and the caving magazine, *Descent*.

4. Science

Dye Tracing

Dye tracing projects will be undertaken at the points marked in figure 7, above. Specifically, we will measure flow rate from Pozu Cabeza Muxa/La Texa to any potential Chica streamway encountered lower down in the cave (small streamways have already been encountered about the rift sections, suggesting that they may feed a larger system deeper down). This could be carried out in parallel with any possible dye trace from Los Texos (see expedition aims, above). All such projects could contribute to the wealth of existing OUCC knowledge of the area hydrology.[4]

Cave Surveyance and GPS Entrance Logging

New regions of cave encountered will be thoroughly surveyed in order to characterise and map them for possible future exploration. Collected survey data will be processed using Survex[13], and surveys drawn up as soon as possible after the measurements are taken.

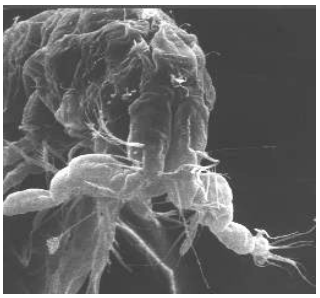
New entrances located during shaft-bashing excursions will be carefully recorded and given a GPS location (should this technology be available). Data will be contributed to the excellent and long-standing shaft-bashing project within OUCC[14].

Cave Conservation Project

The expedition will assign a few 'conservation officers', who will be in charge of undertaking a preliminary investigation into the effects of an OUCC exploration effort into the appearance and cave life of a system such as Fissura de Chica.

Data will include photographs from particular locations at the entrance and several 'conservation points' within the cave taken before, after, and (once) during its exploration. Samples of cave stream water will then be collected and analysed post-expedition for the presence and density of particular microscopic stygobionts* that could usually thrive in similar environments[15] (see figure 10). We expect measurable differences with time in the densities of species less refractory to intrusions into their natural habitat, or those deriving an advantage from caver presence (feeding on caver waste at a camp-site, for example).

We further predict that any changes in cave ecosystems will be relatively short-lived compared to those made to the appearance of the cave (eg wear to awkward pitch heads, damage/staining of fragile rock formations)[16]. We will encourage future OUCC caving expeditions to re-test Chica for signs of such biological flexibility. OUCC has a privileged position in that it returns to the Ario region in successive years, giving us a unique insight into such long-term conservation trends. Regular cavers, more than anyone, should appreciate the beauty of the natural environments that we explore and acknowledge the need to preserve them for the future wherever possible.



*creatures subsisting in groundwater

Fig 10 – Parastenocaris. A microscopic cave-dwelling copepoda

5. Members Involved in the Expedition

(indicates possession of advanced wilderness medical training certificate or equivalent)*

Committee

Leader – Chris Sinadinos, 4th Yr Biochemistry Undergraduate, previous Picos expeditions including committee roles. Conservation Officer.

Deputy Leader – Dave Legg, D Phil Student in History, previous leadership role in OUCC Picos expedition.

*Honorary President – Gavin Lowe**, Computer Science Lecturer, 18 previous expeditions to Spain, China and Poland, Safety and Rescue Officer.

Secretary – John Pybus, Research Assistant in Dept. Zoology, 6 previous expeditions, Surveying, Photography, and Dye Tracing Coordinator.

Sponsorship Officer – Rosa Clements, Mathematics graduate, 4 previous Picos expeditions. Expedition Artist.

Treasurer – Gareth Phillips, 4th Yr Physics Undergraduate, three previous expeditions and previous committee experience.

*Chief Gear Officer – Simon Goddard**, Chef Balliol College, three previous Spanish expeditions and extensive experience as equipment officer.

Assistant Gear Officer – Thomas Evans, 2nd Yr Biology Undergraduate, 1 previous Spanish expedition, Conservation Officer

*Medical Officer – Peter Devlin**, Project Manager, JP Morgan, extensive expedition experience, OUCC Meets Secretary.

Further Members

*Chris Fernau** – University Computer Consultant, experience of two previous Spanish expeditions, Assistant in Sponsorship/Marketing.

Peter Eastoe – Former Oxford Undergraduate, Trainee Accountant, one previous expedition to Spain.

Chris Cooper (Pod) – Unix Systems Programmer, Oxford University Computing Service. Experienced OUCC caver, single previous Spain expedition, Expedition Website Developer.

*Michael Hopley** – Maths and Philosophy Graduate, two previous expeditions. Expedition Website Developer and Chief Field 1st Aid Officer.

Andrew Morgan – Microbiology PhD Student, Conservation Project Correspondent.

Fleur Loveridge – Engineering Geologist and previous Oxford Graduate, extensive expedition experience in Spain and China.

Chris Densham – Scientist, Rutherford Appleton Laboratory, previous expeditions in Spain, China and Mexico.

Jonathan Cooper – Lecturer in Animal Behaviour, Lincoln University, 11 previous Spain and Poland expeditions.

*Simon Flower** – Doctor of Medicine, Edinburgh, previous expeditions to Spain.

The expedition will strive to recruit more members from within OUCC before departure – especially freshers!.

Agents at Home and in the Field

Home Agent – Steve Roberts, Lecturer and Fellow in Materials Science at Oxford, Current OUCC President.

Field Agent – Juan Jose Gonzales Suarez, Current President of the FAE.

Science Project Advisors

Dye Tracing – Lou Maurice, Hydro-geologist, University College London, OUCC member.

Cave Conservation Study Advisor – Timothy Guilford, Lecturer and College Fellow at Oxford, OUCC member.

Cave Conservation Study Referee – Graham Proudlove, Lecturer Cave Biology, BCRA and The Manchester Museum.

Divers

Tony Seddon.
Martin Groves.
Joel Corrigan.

Figure 11 – Re-fuelling in 2003

6. Projected Chica 2006 Budget

All figures in British Pounds Sterling

COSTS

Transport*		
Purchase of Vehicle	1600	
Insurance, etc	300	
Ferry	400	
Fuel	300	
SubTotal		2590
Equipment		
Ropes and Rigging Equipment	400	
Surface Camp Gear	300	
Underground Camp Gear	100	
New Expedition Stretcher	500	
Medical Supplies	100	
Surveying Tools	100	
Equipment Hire	100	
Spares Individual Kit	50	
Dye Tracing Equipment	50	
Photography	100	
Science Project Apparatus	50	
SubTotal		1850
Expedition Literature/Advertising		
Prospectus	50	

	Post Expedition Reports	100	
	OUCC Proceedings	50	
	OUEC Bulletin	50	
	SubTotal		250
Kitty Outgoings			
	Food	1000	
	Fuel	200	
	SubTotal		1200
1st Aid/Expedition Medical Training			875
Admin/Miscellaneous			100
Contingency (11.5%)			790
TOTAL			7655

*Assumes that vehicle purchase and post expo sale proves necessary.

INCOME

Deposits	2000
Kitty Contributions	1200
Travel With Expedition	720
Sale of Vehicle Post Expo	750
OUCC Funding/Previous Expo	100
University Exploration Club Funding	200
TOTAL	4970

SUMMARY

Costs	7655
Income	4970
AMOUNT TO RAISE	2685

TYPICAL INDIVIDUAL MEMBER CONTRIBUTION

Based on Student Spending 6 Wks in the Field

Deposit	80
Kitty Contribution	120
Gear Purchase/Maintenance	200
Insurance	28
Travel	140
TOTAL	546

7. Final Word

It remains simply to emphasise the sheer excitement within and around OUCC regarding the forthcoming 2006 summer expedition. I would like to thank Gavin Lowe for his support and encouragement in getting the project off the ground, and indeed to several other long-standing OUCC members for their collective team spirit. I am sure that we as a committee will do everything in our power to allow Chica 2006 to live up to the outstanding standards that the club have set.

Bring on the Picos, Chica, and Culiembro! Chris Sinadinos, November 2005.

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